

NOTES ON CERTAIN TAXA OF THELYPTERIS SCHMIDEL (THELYPTERIDACEAE)
OF ASIA.

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During my studies involving the genus Thelypteris Schmidel of the Indian region (see Panigrahi, 1975 a, b), the following further notes on certain species occurring in Asia have been prepared.

1. THELYPTERIS SUBPUBESCENS (Bl.) K. Iwats.

Blume (1828) described Aspidium subpubescens based on plants "... ad rivulos circa Batavium etc." He recognised within it three more varieties viz. B, C & D, of which var. B came from " in umbrosis insulae nusae Kambang". He also described plants from " in humidis Javae et Moluccarum" which he wrongly identified as Aspidium amboinense Willd.

A thorough search at the Rijksherbarium, Leiden and at the herbaria at Utrecht, Geneva, Paris, British Museum (N.H.) and Kew brought to light only two sheets viz. 908337-179 and 908337-184 at Leiden, L) from Java labelled Aspidium subpubescens Bl. (but not in Blume's handwriting). The sheet -179 has one frond from the stipe, -184, two separate fronds also from the stipe mounted on either side of one entire plant with + erect caudex bearing two fronds (Plate I). All the fronds are fertile, herbaceous in texture, pinnae c. half-way cut towards the costae, only one pair of veins anastomosing and a deeply lobed terminal pinna not much more prominent than the largest lateral pinna. The pinnae are rather sparse and the entire plant is + glabrous, not subpubescent. These two sheets were labelled at the Rijksherbarium, Leiden as the " Type Duplicate" and " Type" of Aspidium subpubescens Bl. and photographs of these were sent to different herbaria (viz. BM, K). Prof. Holttum who examined these types on loan from Leiden identified and described some Malayan plants as Cyclosorus subpubescens (Bl.) Ching (see Holttum, 1954, 1971 a).

Further search in the European herbaria mentioned above brought up a number of specimens from Java labelled Aspidium amboinense W., presumably by Korthals, but none by Blume himself. Of these, the specimen on a double-size sheet (viz. 910327-113 at Leiden) bears a label in Blume's own handwriting. It reads: "Aspidium puberum [nom. nud] aan de Kanten der rivier op Tanjong Krukot Batavia". This specimen (Plate II) bears another label " 307 Aspidium amboinense W., Java, Bl." written by Korthals as stated earlier and has an erect caudex with tufted fronds, 7-8 in number, coarser in texture, pinnae cut less than 1/4 towards the

costae, 2-2½ pairs of veins anastomosing, a more prominent terminal pinna, pinnae more numerous, acute and rigid. Thus, it fits more appropriately with Blume's description of Aspidium subpubescens than the other two sheets from Java (cf. Plate I), except for the fact that the latter have " serraturis profundioribus", which, amongst others, according to Blume (1828:149, CBS.), A. subpubescens differs from A. amboinense [.... pinnis numerosioribus, acutioribus, rigidioribus, serraturis profundioribus, rachi stipiteque angulatis]. We have no specimens from Java which can definitely be ascribed to A. amboinense sensu Blume, non Willd. (1810); Blume's descriptions of both the species are not precise enough to fix firmly these two specific epithets to either one or the other set of specimens from Java represented by Plate I and Plate II. It is natural that in view of the presence of two sets of specimens at Leiden, the typification of Aspidium subpubescens Bl. should have posed a problem to the taxonomists from time to time and thereby caused so much confusion in the identification of certain taxa of Thelypteris from South-East Asia and the Indian region (see Ching, 1938, Holttum, 1954, 1971 a, Panigrahi 1960, 1975a and K. Iwatsk., 1965 amongst others).

Panigrahi (1960) and Holttum (1971, a) have, however, treated the specimen on the double-size sheet (Plate II) as the holotype of Aspidium subpubescens Bl. on the ground (see Holttum, l.c.) that this specimen i) fits better with the description; ii) the data regarding the exact locality in Java as given by Blume (1828:149) is almost the same as recorded on the sheet; iii) from among the plants referred to var. B, var. C and var. D by Blume, we have at Leiden the var. B and var. C labelled by Blume himself. This selection of the double-size sheet as the holotype leaves out the question of the identity and nomenclatural status of the two specimens from Java labelled as Aspidium subpubescens Bl. and treated hitherto as as the " Type" and " Type duplicate" of the species. I, therefore, consider A. subpubescens Bl. as comprising two heterogenous elements of which the specimen on the double-size sheet must be treated as lectotype. And since there is no substantial difference between the other element and Polypodium dentatum Forssk. (1775) except with regard to the degree of hairiness of the fronds, the second element is identified with Thelypteris dentata (Forssk.) E. St. John (1936) (= Christella dentata (Forssk.) Brownsey & Jermy, 1973; see also Holttum, 1971a). This lectotypification of Aspidium subpubescens Bl. would necessitate certain corrections in the citations of synonyms for T. subpubescens (Bl.) K. Iwats (1965), as set out below:

THELYPTERIS SUBPUBESCENS (Bl.) K. Iwats. in Mem. Coll. Sci. Univ. Kyoto, Ser. B, 31(3):173 (1965) pro parte, quoad typum tantum, excl. synon et descr. Basionym: Aspidium subpubescens Bl., Enum. Pl. Jav. 2:149 (1828). Type: Java: aan de Kanten der rivier op Tanjong Krukot Batavia, Blume s.n. 1910327-113, L, selected here as lectotype]. Synonyms: Nephrodium molle var. major Bedd. Handb. Ferns Brit. India, Ceylon, Malaya Penins. Suppl.: 76 (1892) pro parte, quoad

pl. Sumatra (BM); Dryopteris sumatrana v.A.v.Ros., Malayana Ferns: 227(1909). Type: Sumatra in Herb. Nat. Hist. Mus. (BM, selected by Holttum (1954:276) as the "appropriate type"; Cyclosorus sumatranus (v.A.v.R.) Ching, Bull. Fan Mem. Inst. Biol. Bot. 10:249(1941); Holttum, Rev. Fl. Mal. 2:275(1954) et Panigrahi & Manton in Journ. Linn. Soc. Bot. 55:729-743(1958); Thelypteris sumatrana (v.A.v.R.) K. Iwats. in Acta Phytotax. Geobot. 22:101(1967); Reed in Phytologia 17:318 (1968); non Cyclosorus subpubescens sensu Holttum, l.c. 91954) nec Panigrahi et Manton l.c. (1958).

Distribution: Java, Sumatra, Malaya and India (Eastern). Specimens from India examined: Assam, G. Mann s.n. (labelled Nephrodium molle) (L); Darrang Dist., Balipara forest, Daimukh, 1889, G. Mann s.n. (L); Meghalaya: Khasi Hills, Cherrapunji, in woods, 1889, G. Mann s.n. (L); Garo Hills, 300 m, Apr. 1888, G. Mann s.n. (L).

2. DRYOPTERIS ACUMINATA ROSENSTOCK

Rosenstock (1917) described Dryopteris acuminata based on Zollinger 735 from Java and identified with it the plant from nusae Kambang labelled by Blume Aspidium puberum [nom. nud.] var. B (L). Rosenstock's species which may be assigned to the subgenus Cyclosorus K. Iwats. (1965) and to the genus Christella Lev. (see Holttum, 1971 b) is characterised by + herbaceous texture, a few pairs of basal pinnae gradually reduced, rhachis and costae + hairy; pinnae caudate-acuminate and pinnules strongly oblique, 1.5 - 2 pairs of veins anastomosing and the sinus with long callus. Thelypteris acuminata (Panz. in Christem et Panz.) Morton, on the other hand, based on a different type from Japan is assigned to the subgenus Cyclosorus (Link) Morton (see K. Iwats., 1965: 135, 184, 186). It has coriaceous or rigidly chartaceous texture, its lowest pinnae not or slightly reduced, only 1-pair of veins anastomosing with an excurrent veinlet running to the sinus and sori confined to the lobes of the pinnae. The two species are distinct. On transfer to the genus Thelypteris Schmidel, D. acuminata Rosenst. needs a new name. T. blumei nom. nov. is herein proposed, after Blume who first suspected his var. B to represent a different species:

THELYPTERIS BLUMEI Panigrahi, nom. nov. Synonyms: Dryopteris acuminata Rosenst. in Med. Rijks. Herb. no. 31:7(1917). Type: Java, Zollinger 735(L); Aspidium subpubescens Bl. var. B Bl., Enum. Pl. Jav. 2: 149(1828). Type: Java, nusae Kambang, Blume s.n. (labelled Aspidium puberum var. B) (L).

3. DRYOPTERIS PSEUDOAMBOINENSIS ROSENST.

Another species occurring in Java and Sumatra and almost approaching Thelypteris subpubescens (Bl.) K. Iwats., pro parte (= T. sumatrana (v.A.v.R.) K. Iwats.) and sometimes confused with it in herbaria if the rhizome is not present, is Dryopteris pseudoamboinensis Rosenst. based on Korthals' specimens from Java and Sumatra. Although the two species resemble each other in frond form in having 2-3 pairs of lower pinnae gradually reduced (but not to mere

auricles), a prominent terminal pinna, 2-2½ pairs of veins anastomosing, T. subpubescens has a distinctive erect caudex with tufted habit bearing 8-9 fronds, the fertile fronds sometimes sub-dimorphic with a longer stipe and more remotely-borne fertile pinnae on rhachis, pinnae crenate and entirely glabrous. It is a tetraploid species and produces sterile F₁ hybrids when crossed with T. dentata (Forssk.) E. St. John (= Cyclosorus dentatus (Forssk.) Ching from Madeira as also with C. subpubescens sensu Holttum (1954) from Malaya and its erect caudex breeds true and remains as such under cultivation over a period of years (cf. Panigrahi & Manton, 1958). Dryopteris pseudoamboinensis Rosenst. (Plate III), on the other hand, is characterised by a creeping rhizome which puts up solitary fronds in succession, its rhachis, costae and margins of pinnae are provided with short crisped hairs on the upper surface and short papillate hairs on the lower surface.

On transfer to Thelypteris Schmidel, the nomenclatural citations are:

THELYPTERIS PSEUDOAMBOINENSIS (Rosenstock) Panigrahi, comb. nov.
Dryopteris pseudoamboinensis Rosenstock, Med. Rijks. Herb. no. 31 : 7 (1917). Syntype: Sumatra, Korthals 270, selected here as lectotype. (L); non Cyclosorus pseudoamboinensis sensu Panigrahi, Rapp. Huit. Inter. Bot. Cong. Paris: 9-10: 82 (1954) nom. nud.

Distribution: Java, Sumatra, Malaya and India. Specimens from India examined: Tamil Nadu: Shevroy Hills, 1372 m, Turrell 28 (P); Uttar Pradesh: Kumaon Daon Doon, 1875, Hope 44 (P); Dehar Dun, Bank of Song river, above Lachenwala, 610 m, Dec. 1886, Hope 187 (P); Nepal frontier, Jalesain nala, 29 Apr. 1900, Inayat 23916 (P). West Bengal: Darjeeling, Ryang, 610 m, Clarke 13662 B (P).

4. THELYPTERIS TERMINANS (J. Sm. ex Hook. f.) Panigrahi, comb. nov.
Nephrodium terminans J. Sm. ex Hook. f., Sp. Fil. 4: 73 (1862) (pro parte, quoad typum, excl. synonym; Bedd., Ferns South India: 32, t. 90 (1864). Type: India, Kumaon, Wallich 386 (K, holotype). N. pteroides Baker in Hook. et Bak., Syn. Fil.: 289 (1868); Bedd., Handb. Ferns Brit. India, Ceylon and Malaya Ferns.: 269 (1883), non Polypodium pteroides Retz. (1791). Amphineuron terminans (Wall. ex Hook.) Holttum in Amer. Fern Journ. 63: 82 (1973). Aspidium terminans Wall. ex Kunze in Linnaea 23: 230 (1846), nom. nud. Nephrodium terminans J. Sm. in Bot. Mag. 72 Compan.: 32 (1846) nom. nud.

Distribution: India, Sri Lanka and Burma. Some of the specimens from India examined are: Orissa, Mayurbhanja district, Bahreipani, 900 m, 20 Feb. 1958, Panigrahi 12679 (K); Andhra Pradesh, Godavari Dist. Rampa Hill, 600 m, Feb. 1885, Gamble 15929 (K). Tamil Nadu: Nilagiri Hills, 1860, Beddome 137 (K). Karnatak: Annamalallys, 1000 m, Beddome s.n. (type of F.S.I.t.90).

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Plate I. *Aspidium subpubescens* Bl. Type material from Java, pro parte = *Thelypteris dentata* (Forssk.) E. St. John (L, photo, K).



Plate II. Aspidium subpubescens Bl. Type material collected by Blume from Java, mounted on the double-size sheet at Leiden and labelled Aspidium puberum Bl. (nom. nud.); selected here as lectotype: = Thelypteris subpubescens (Bl.) K. Iwats. p.p.



Plate III. Thelypteris pseudoamboinensis (Rosenst.) comb.nov.
 (= Dryopteris pseudoamboinensis Rosenst. Syntype:
 Sumatra, Korthals 270 (L), selected here as
 lectotype).